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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/656,086	09/05/2003	Yong-Chul Park	50736/P849	9934
23363 7590 12/04/2007 CHRISTIE, PARKER & HALE, LLP PO BOX 7068 PASADENA, CA 91109-7068			EXAMINER WEINER, LAURA S	
			ART UNIT 1795	PAPER NUMBER
			MAIL DATE 12/04/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/656,086

Applicant(s)

PARK ET AL.

Examiner

Laura S. Weiner

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 November 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,6-13 and 31-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9 is/are allowed.
- 6) ☒ Claim(s) 1,6-8,10-13 and 31-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>9-6-07</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of Group I, claims 1-19, 31-34 in the reply filed on 12-20-05 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

The elected species was an electrolyte comprising an additive comprising a sulfone-based compound of Formulas (1), (2) or (3), a C3-C30 organic peroxide of claim 7 and an organic solvent of at least one of carbonates, esters, ethers or ketones where the carbonate is cited in claim 13. Another species was searched which was an electrolyte comprising an additive comprising a sulfone-based compound of Formula (3), an azo-based compound of claim 8 and an organic solvent of at least one of carbonates, esters, ethers or ketones where the carbonate is cited in claim 13. After searching a patent was found teaching the first species. Claims 2-5, 20-30 have been cancelled. Therefore, claims 1, 6-13, 31-34 have been examined.

2. Claims 14-19 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention and species, there being no allowable generic or linking claim.

***Response to Arguments***

3. Applicant's arguments with respect to claims 1, 6-8, 10-13, 31-34 have been considered but are moot in view of the new ground(s) of rejection.

***Claim Rejections - 35 USC § 103***

4. Claims 1, 6-8, 10-13, 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chaloner-Gill et al. (5,580,680) in view of Kim et al. (US 2001/0009744).

Chaloner-Gill et al. teaches in column 2, an electrochemical cell comprising an anode, a cathode and a polymeric electrolyte comprising a solid polymer matrix, an inorganic salt, a solvent and a catalyst. Chaloner-Gill et al. teaches in column 4, lines 1-25, that the anode comprises lithium, lithium alloys, carbon, etc. and that the cathode comprises V<sub>6</sub>O<sub>13</sub>. Chaloner-Gill et al. teaches in column 7, lines 48-65, that the electrolyte composition typically comprises from 5-25 weight percent of the inorganic ion salt. Chaloner-Gill et al. teaches in column 12, claim 1, that the solid electrolyte comprises a solid polymeric matrix, an inorganic salt, a solvent and a catalyst. Chaloner-Gill et al. teaches in column 13, claim 5, that the solvent can be **sulfolane**, propylene carbonate, ethylene carbonate, etc. and mixtures thereof and the volatile material polymerization catalyst can be benzyl peroxide, azobisisobutyronitrile, etc. and teaches in claim 7, that the volatile material polymerization catalyst comprise about 0.1-2.0 percent by weight.

Chaloner-Gill et al. teaches the claimed invention except does not specifically teach that the sulfone-based compound is represented by the formula (1) cited in claim 1.

Kim et al. teaches an electrolyte for a lithium secondary battery comprising a non-aqueous solvent and a sulfone based organic compound represented by Formula (I), **Formula( II) sulfolane** and Formula (III). Formula (I) of Kim et al. is the exact Formula (1) claimed in claim 1. Kim et al. teaches on page 3, [0031], that the electrolytes of examples 1-10 were prepared by adding 1 M LiPF<sub>6</sub> to a non-aqueous organic solvent comprising EC and DMC and 1-5 wt% of a sulfone based compound such as methyl sulfone, vinyl sulfone, phenyl sulfone, etc.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the sulfone-based organic compound of Formula (I) taught by Kim et al. instead of the sulfone-based organic compound, sulfolane taught by Chaloner-Gill et al. because Chaloner-Gill teaches that these sulfone-based organic compounds can both be used and one would expect similar compounds to give similar results.

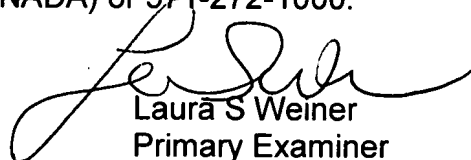
***Allowable Subject Matter***

5. Claim 9 is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura S. Weiner whose telephone number is 571-272-1294. The examiner can normally be reached on M-F (6:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Laura S Weiner  
Primary Examiner  
Art Unit 1795

December 3, 2007